We claim:

1. A polymeric sulfide compound having the formula

$$(PS)_n M^{+z} P'_{z-n}$$

where P is a polymer chain; S is sulfur; P' is another polymer chain P or is an "R" group selected from the group consisting of alkyl groups having one to about 30 carbon atoms, aromatic groups having about 6 to about 20 carbon atoms, and cycloalkyl groups having about 5 to about 20 carbon atoms; M is a metal atom or a nonmetal atom, having an oxidation state "z" of greater than one, wherein the nonmetal atom is selected from the group consisting of atoms of phosphorus, boron, nitrogen and sulfur; and n is an integer having a value of from 1 to z.

2. The compound of claim 1, wherein the metal atom M is selected from the group consisting of atoms of silicon, tin, titanium, aluminum, arsenic, copper, calcium, zinc, lead, mercury and cadmium.

3. The compound of claim 1, wherein the polymer chain P is selected from the group consisting of homopolymers of conjugated diene monomers, and copolymers and terpolymers of the conjugated diene monomers with monovinyl aromatic monomers and trienes.

4. The compound of claim 3, wherein the polymer chain is selected from the group consisting of polyisoprene, polystyrene, polybutadiene, butadiene-isoprene copolymer, butadiene-isoprene-styrene terpolymer, isoprene-styrene copolymer, and styrene-butadiene copolymer.

5. The compound of claim 1, wherein the polymer chain is selected from the group consisting of homopolymers, copolymers and terpolymers of alkylene sulfide monomers, and homopolymers, copolymers and terpolymers of alkylene oxide monomers.

6. The compound of claim 5, wherein the alkylene sulfide and alkylene oxide monomers are selected from the group of monomers consisting of ethylene sulfide, propylene

sulfide, styrene sulfide cyclohexene sulfide, cyclopentene sulfide, ethylene oxide, propylene oxide, styrene oxide, cyclohexene oxide, and cyclopentene oxide.

7. A method of making a polymeric sulfide compound having the formula

$$(PS)_n M^{+z} P'_{z-n}$$

where P is a polymer chain; S is sulfur; P' is another polymer chain P or is an "R" group selected from the group consisting of alkyl groups having one to about 30 carbon atoms, aromatic groups having about 6 to about 20 carbon atoms, and cycloalkyl groups having about 5 to about 20 carbon atoms; M^{+z} is a metal atom or a nonmetal atom, having an oxidation state "z" of greater than one, wherein the nonmetal atom is selected from the group consisting of atoms of phosphorus, boron, nitrogen and sulfur; and n is an integer having a value of from 1 to z,

comprising the steps of:

providing a polymer chain prepared by anionic solution polymerization and comprising a living end,

reacting the living end of the polymer chain, after polymerization but while still in the presence of an inert solvent, with an alkylene sulfide compound;

subsequently reacting the resulting polymer chain, while still in the presence of the inert solvent, with a coupling agent having the formula

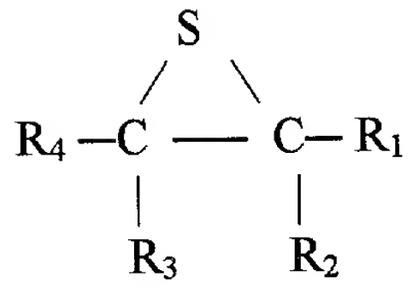
$$M^{+z} X_{z-m} R_m$$

where M^{+z} and R are the same as above, X is a halide; (z - m) represents an integer having a value of at least 2, and m is an integer having a value of zero to (z - 2).

8. The method of claim 7, wherein M is a metal atom selected from the group consisting of atoms of silicon, tin, titanium, aluminum, arsenic, copper, calcium, zinc, lead, mercury and cadmium.

9. The method of claim 8, wherein the metal atom is silicon.

10. The method of claim 7, wherein the alkylene sulfide compound has the formula



where R_1, R_2, R_3 and R_4 are the same of different from each other, and are independently selected from the group consisting of hydrogen atoms, alkyls having one to about 30 carbon atoms, aromatics having about 6 to about 20 carbon atoms, and cycloalkyls having about 5 to about 20 carbon atoms.

11. The method of claim 9, wherein the alkylene sulfide is selected from the group consisting of ethylene sulfide, propylene sulfide, cyclohexene sulfide, cyclopentene sulfide and styrene sulfide.

12. The method of claim 7, wherein the coupling agent is selected from the group consisting of silicon tetrachloride, alkyltrichlorosilane, dialkyldichlorosilane, silicon tetrabromide, alkyltribromosilane, dialkyldibromosilane, tin tetrachloride, alkyl tin trichloride, dialkyl tin dichloride, tin tetrabromide, alkyl tin tribromide, dialkyl tin dibromide, titanium tetrachloride, alkyl titanium trichloride, dialkyl titanium dichloride, titanium tetrabromide, alkyl titanium tribromide, dialkyl titanium dibromide, aluminum trichloride, alkyl aluminum dichloride, aluminum tribromide, alkyl aluminum dibromide, arsenic trichloride, alkyl arsenic dichloride, arsenic tribromide, alkyl arsenic dibromide, boron trichloride, alkyl boron dichloride, boron tribromide, alkyl boron dibromide, nitrogen trichloride, alkyl nitrogen dichloride, nitrogen tribromide, alkyl nitrogen dibromide, phosphorus trichloride, alkyl phosphorus dichloride, phosphorus tribromide, alkyl phosphorus dibromide, copper dichloride, copper dibromide, calcium dichloride, calcium dibromide, zinc dichloride, zinc dibromide, sulfur dichloride, and mixtures thereof.

13. The method of claim 7, wherein the polymer chain having the living end is selected from the group consisting of homopolymers, copolymers and terpolymers of alkylene sulfide monomers, and homopolymers, copolymers and terpolymers of alkylene oxide monomers.

14. The method of claim 12, wherein the alkylene sulfide and alkylene oxide monomers are selected from the group of monomers consisting of ethylene sulfide, propylene sulfide, styrene sulfide cyclohexene sulfide, cyclopentene sulfide, ethylene oxide, propylene oxide, styrene oxide, cyclohexene oxide, and cyclopentene oxide.

15. The method of claim 7, wherein the polymer chain having the living end is selected from the group consisting of homopolymers of conjugated diene monomers, and copolymers and terpolymers of the conjugated diene monomers with monovinyl aromatic monomers and trienes.

16. The method of claim 14, wherein the polymer chain is selected from the group consisting of polyisoprene, polystyrene, polybutadiene, butadiene-isoprene copolymer, butadiene-isoprene-styrene terpolymer, isoprene-styrene copolymer, and styrene-butadiene copolymer.

17. A vulcanizable elastomeric compound comprising a polymeric sulfide compound having the formula

$$(PS)_n M^{+z} P'_{z-n}$$

where P is a polymer chain; S is sulfur; P' is another polymer chain P or is an "R" group selected from the group consisting of alkyl groups having one to about 30 carbon atoms, aromatic groups having about 6 to about 20 carbon atoms, and cycloalkyl groups having about 5 to about 20 carbon atoms; M is a metal atom or a nonmetal atom, having an oxidation state "z" of greater than one, wherein the nonmetal atom is selected from the group consisting of atoms of phosphorus, boron, nitrogen and sulfur; and n is an integer having a value of from 1 to z;

a reinforcing filler selected from the group consisting of silica, carbon black, and mixtures thereof; and

a cure agent including sulfur.

18. The compound of claim 16, wherein the polymer chain P is selected from the group consisting of homopolymers of conjugated diene monomers, and copolymers and terpolymers of the conjugated diene monomers with monovinyl aromatic monomers and trienes.

19. The compound of claim 17, wherein the polymer chain is selected from the group consisting of polyisoprene, polybutadiene, butadiene-isoprene copolymer, butadiene-isoprene-styrene terpolymer, isoprene-styrene copolymer, and styrene-butadiene copolymer.

20. The compound of claim 16, wherein M is a metal atom selected from the group consisting of atoms of silicon, tin, titanium, aluminum, arsenic, copper, calcium, zinc, lead, mercury and cadmium.

21. The compound of claim 16, wherein the metal atom or nonmetal atom is derived from a coupling agent for the polymer chains, selected from the group consisting of silicon tetrachloride, alkyltrichlorosilane, dialkyldichlorosilane, silicon tetrabromide, alkyltribromosilane, dialkyldibromosilane, tin tetrachloride, alkyl tin trichloride, dialkyl tin dichloride, tin tetrabromide, alkyl tin tribromide, dialkyl tin dibromide, titanium tetrachloride, alkyl titanium trichloride, dialkyl titanium dichloride, titanium tetrabromide, alkyl titanium tribromide, dialkyl titanium dibromide, aluminum trichloride, alkyl aluminum dichloride, aluminum tribromide, alkyl aluminum dibromide, arsenic trichloride, alkyl arsenic dichloride, arsenic tribromide, alkyl arsenic dibromide, boron trichloride, alkyl boron dichloride, boron tribromide, alkyl boron dibromide, nitrogen trichloride, alkyl nitrogen dichloride, nitrogen tribromide, alkyl nitrogen dibromide, phosphorus trichloride, alkyl phosphorus dichloride, phosphorus tribromide, alkyl phosphorus dibromide, copper dichloride, copper dibromide, calcium dichloride, calcium dibromide, zinc dichloride, zinc dibromide, sulfur dichloride, and mixtures thereof.

22. A pneumatic tire comprising a component produced from a vulcanized elastomeric compound having the formula

$$(PS)_n M^{+z} P'_{z-n}$$

where P is a polymer chain; S is sulfur; P' is another polymer chain P or is an "R" group selected from the group consisting of alkyl groups having one to about 30 carbon atoms, aromatic groups having about 6 to about 20 carbon atoms, and cycloalkyl groups having about 5 to about 20 carbon atoms; M is a metal atom or a

nonmetal atom, having an oxidation state "z" of greater than one, wherein the nonmetal atom is selected from the group consisting of atoms of phosphorus, boron, nitrogen and sulfur; and n is an integer having a value of from 1 to z;

a reinforcing filler selected from the group consisting of silica, carbon black, and mixtures thereof; and

a cure agent including sulfur.

23. The tire of claim 21, wherein the polymer chain P is selected from the group consisting of homopolymers of conjugated diene monomers, and copolymers and terpolymers of the conjugated diene monomers with monovinyl aromatic monomers and trienes.

24. The tire of claim 22, wherein the polymer chain is selected from the group consisting of polyisoprene, polybutadiene, butadiene-isoprene copolymer, butadiene-isoprene-styrene terpolymer, isoprene-styrene copolymer, and styrene-butadiene copolymer.

25. A method for improving mixing efficiency during compounding of an elastomer with a reinforcing filler, comprising the steps of:

providing a polymeric sulfide compound having the formula

$$(PS)_n M^{+z} P'_{z-n}$$

where P is a polymer chain; S is sulfur; P' is another polymer chain P or is an "R" group selected from the group consisting of alkyl groups having one to about 30 carbon atoms, aromatic groups having about 6 to about 20 carbon atoms, and cycloalkyl groups having about 5 to about 20 carbon atoms; M^{+z} is a metal atom or a nonmetal atom, having an oxidation state "z" of greater than one, wherein the nonmetal atom is selected from the group consisting of atoms of phosphorus, boron, nitrogen and sulfur; and n is an integer having a value of from 1 to z,

mixing the polymeric sulfide compound in a mixer with a reinforcing filler selected from the group consisting of silica, carbon black, and mixtures thereof;

providing a source of moisture;

heating the mixture to a temperature of about 60°C to about 200°C;

wherein during the mixing step up to "n" S-M groups are hydrolyzed in the presence of the moisture and heat resulting in uncoupling of up to "n" polymer chains and a decrease in the viscosity of the mixture.

26. The method of claim 24, wherein M is a metal atom selected from the group consisting of atoms of silicon, tin, titanium, aluminum, arsenic, copper, calcium, zinc, lead, mercury and cadmium.

27. The method of claim 24, wherein P' is a polymer chain P and, during the mixing step, up to "z - n" polymer chain carbon-M group bonds are cleaved, resulting in a further decrease in the viscosity of the mixture.

28. The method of claim 24, wherein the polymer chain P is selected from the group consisting of homopolymers of conjugated diene monomers, and copolymers and terpolymers of the conjugated diene monomers with monovinyl aromatic monomers and trienes.

29. The method claim 28, wherein the polymer chain is selected from the group consisting of polyisoprene, polystyrene, polybutadiene, butadiene-isoprene copolymer, butadiene-isoprene-styrene terpolymer, isoprene-styrene copolymer, and styrene-butadiene copolymer.